CLAIMS

1. Pressure mode breathing aid device, comprising means (8) for supplying breathable gas to an inspiratory branch (3) of a patient circuit (1) at an inspiratory pressure (AI), characterized by:

- means (12; 32; 42) of measuring the breathed volume (VTI, VTE),
- means of comparing the breathed volume (VTI; VTE) with a command (VTImini; VTEmini), and
- regulation means (11) to increase the inspiratory pressure (AI) in the case of a breathed volume lower than the command (VTImini; VTEmini), and to reduce the inspiratory pressure in the case of a breathed volume higher than the command (VTImini; VTEmini).

2. Device according to Claim 1, characterized in that in order to adjust the inspiratory pressure, the regulating means (11) adjust a pressure command applied to a regulated pressure ventilation unit (8).

3. Device according to Claim 1 or 2, characterized in that the means (12; 32; 42) for measuring the breathed volume measure the volume amount (VTI; VTE) which has been breathed by the patient during a breathing cycle, and the regulating means (11) are based on the result of the comparison (21) of this volume amount with the command in order to adjust the inspiratory pressure applied during a following cycle.

4. Device according to one of Claims 1 to 3, characterized in that the means (12; 42) of measuring the breathed volume measure the volume (VTI) inspired by the patient.

5. Device according to one of Claims 1 to 3, characterized in that the means (32; 42) of measuring

the breathed volume measure the volume (VTE) expired by the patient.

6. Device according to one of Claims 1 to 3, characterized in that the means (42) of measuring the breathed volume selectively measure the volume inspired (VTI) or the volume expired (VTE) by the patient.

7. Device according to Claim 4, characterized in that it comprises means (8) for connecting the inspiratory branch (3) in substantially gas-tight manner with the respiratory channels of the patient during inspiratory phases of the respiratory cycle and to interrupt the flow of breathable gas in the inspiratory branch (3) during expiratory phases of the respiratory cycle, and in that the means (12) of measuring the breathed volume are connected to the inspiratory branch (3).

8. Device according to Claim 5, characterized in that the patient circuit (1) comprises an expiratory branch (4) and in that the device comprises means (5) of connecting the expiratory branch (4) in a substantially gas-tight manner with the respiratory channels of the patient during expiratory phases of the respiratory cycle and to interrupt the flow of gas in the expiratory branch (4) during inspiratory phases of the respiratory cycle, and in that the means (32) of measuring the breathed volume are connected to expiratory branch (4).

9. Device according to Claim 6, characterized in that the patient circuit (1) comprises a bidirectional branch (5) to which are connected the inspiratory branch (3) and an expiration path (4), in that the means (42) of measuring the breathed volume are connected to the bidirectional branch and are capable of measuring the volume in both directions of flow, means (43) being provided to select the direction of the flow in which the breathed volume measuring means (42) measure the volume.

10. Device according to one of Claims 1 to 9, characterized in that the regulating means increase the inspiratory pressure (AI) in the cases of a breathed volume (VTI, VTE) less than the command where the inspiratory pressure (AI) is less than a predetermined maximum pressure (AImaxi).

11. Device according to one of Claims 1 to 10 characterized in that the regulating means reduce the inspiratory pressure (AI) in the cases of a breathed volume (VTI, VTE) higher than the command where the inspiratory pressure (AI) is greater than a predetermined minimum pressure (AImini).

12. Device according to one of Claims 1 to 11, characterized in that, in at least certain of the said breathed volume (VTI; VTE) cases below and above the command (VTImini; VTEmini), the regulating means apply to the inspiratory pressure a pressure variation which increases with the difference between the measured breathed volume (VTI, VTE) and the command (VTImini, VTEmini).

13. Device according to one of Claims 1 to 11, characterized in that, in at least certain of the said breathed volume cases (VTI; VTE) below and above the command (VTImini; VTEmini) the regulating means apply to the inspiratory pressure a pressure variation equal in percentage to the difference between the measured breathed volume (VTI; VTE) and the command (VTImini: VTEmini).

14. Device according to one of Claims 1 to 11, characterized in that, in at least certain of the said cases of breathed volume (VTI; VTE) below and above the command (VTImini; VTEmini), the regulating means compute a modified pressure and apply the modified pressure if the modified pressure does not go beyond a predetermined extreme value and make the inspiratory pressure equal to the predetermined extreme value if

the computed modified pressure goes beyond the predetermined extreme value.

15. Device according to Claim 10 or 14, characterized in that it comprises a means (26) of indicating the simultaneous occurrence of a breathed volume (VTI; VTE) below the command (VTImini) and an inspiratory pressure (AI) at least equal to a predetermined maximum pressure.

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